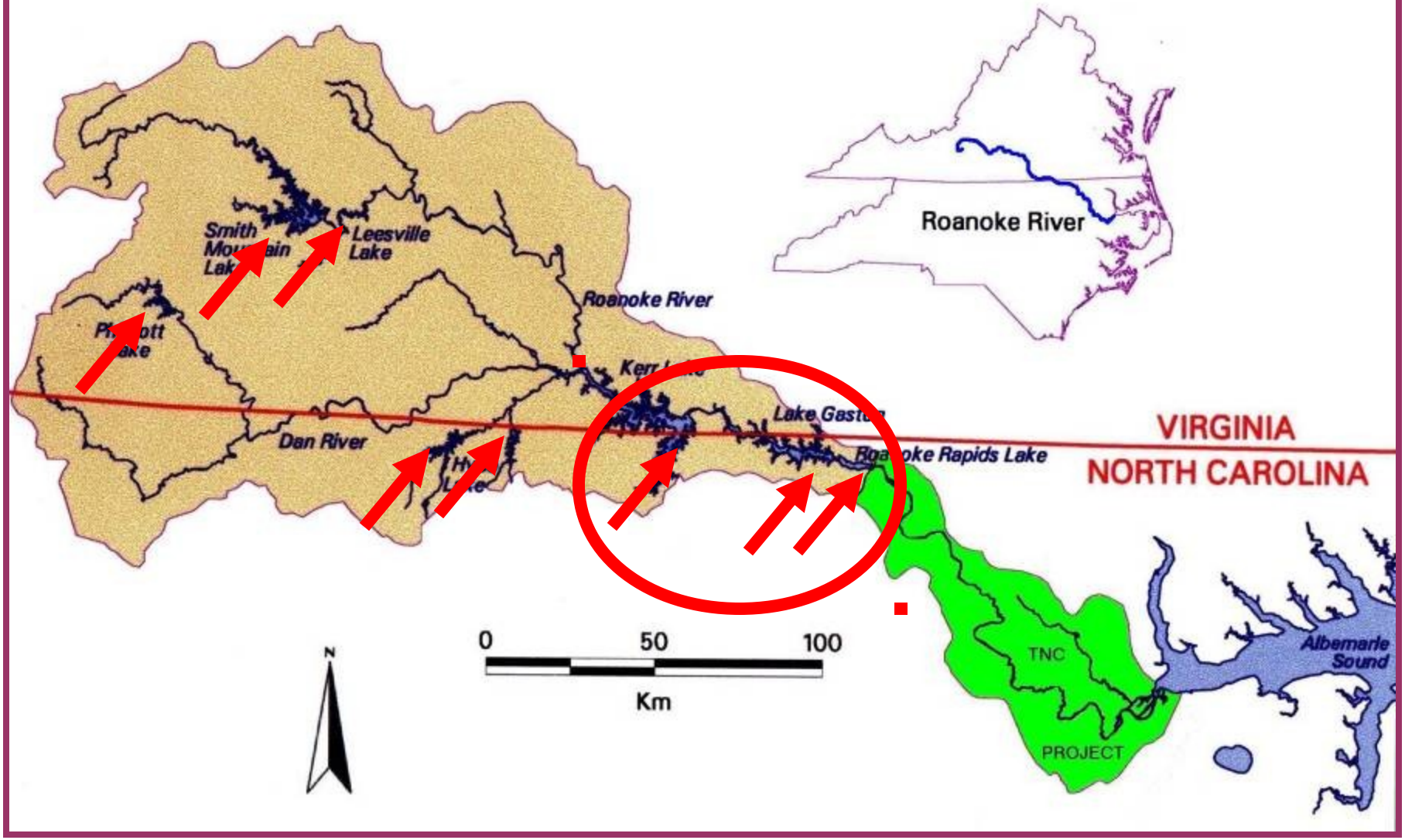
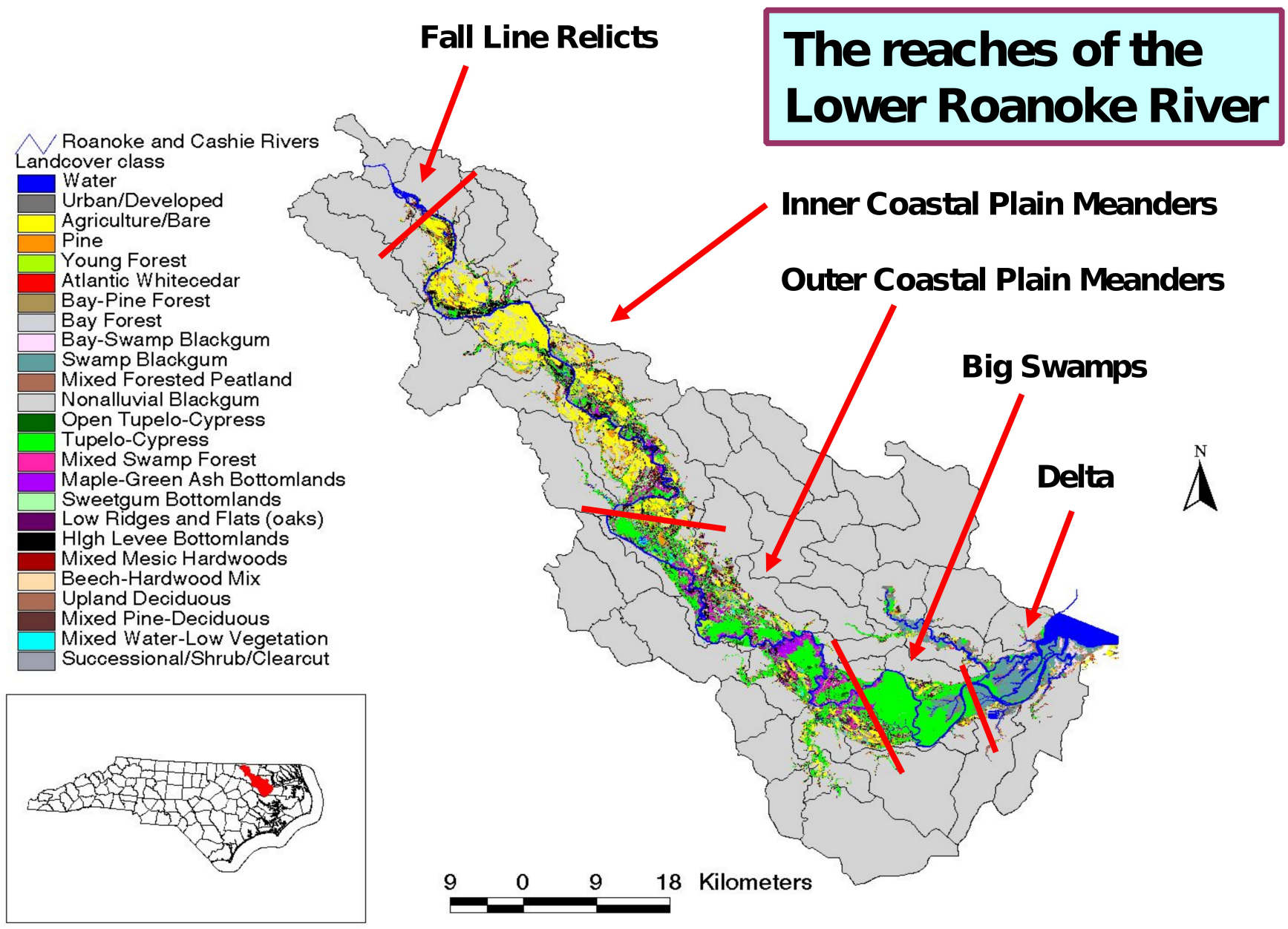
Introducing the Roanoke River
Virginia & North Carolina, USA

ROANOKE RIVER WATERSHED



The reaches of the Lower Roanoke River



Fall Line Relicts

Inner Coastal Plain Meanders: Rich Slopes and Mesic Forests

Outer Coastal Plain Meanders: Ridges, Swales, & Levees

Big Swamps

Delta: Peat Swamps and Pocosins

CONSERVATION SIGNIFICANCE

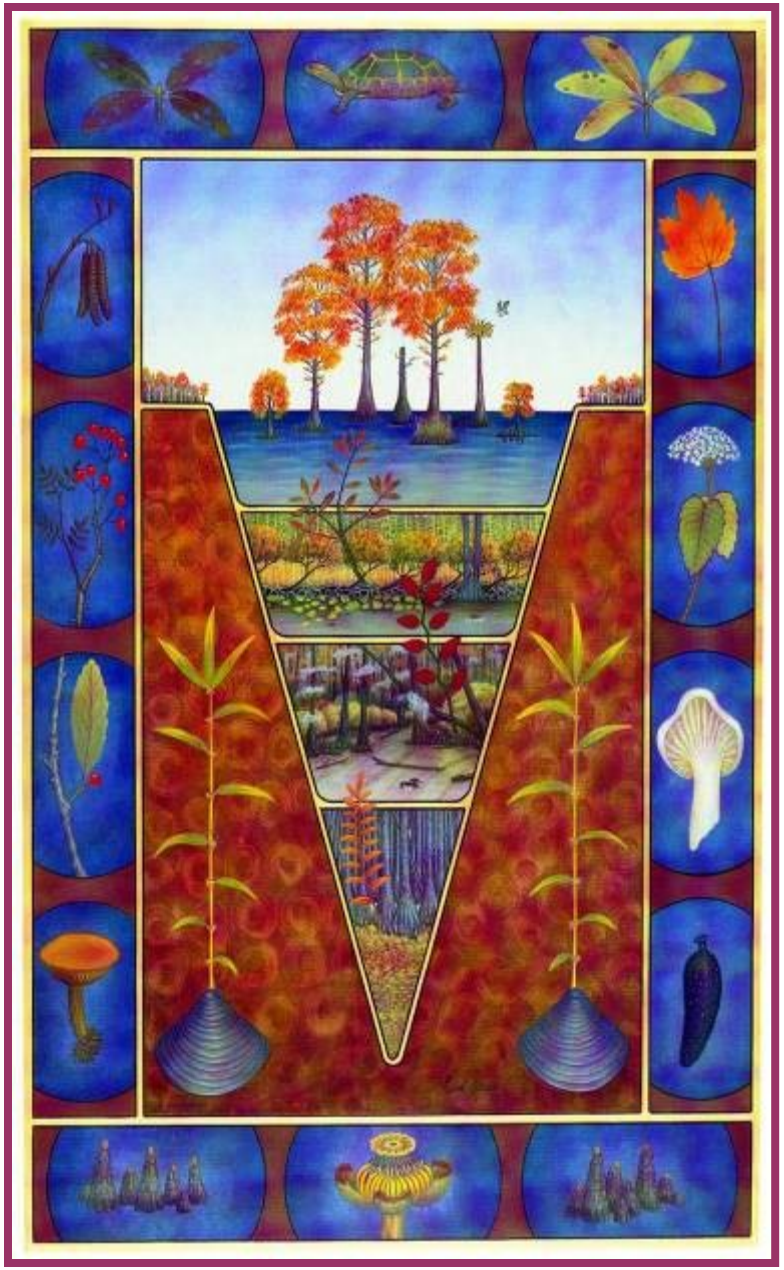
- **The Lower Roanoke River floodplain is:**
  - **<u>Big</u> = 137 miles long, and up to 6 miles wide**
  - **One of the largest, least disturbed Bottomland Forest Systems on the Atlantic slope**
  - **One of the largest and least disturbed Alluvial River Systems in North America**
  - **The Source of 67% of in-flow to the Albemarle-Pamlico Estuary System (America's 2nd largest estuary).**

The Lower Roanoke provides habitat for:

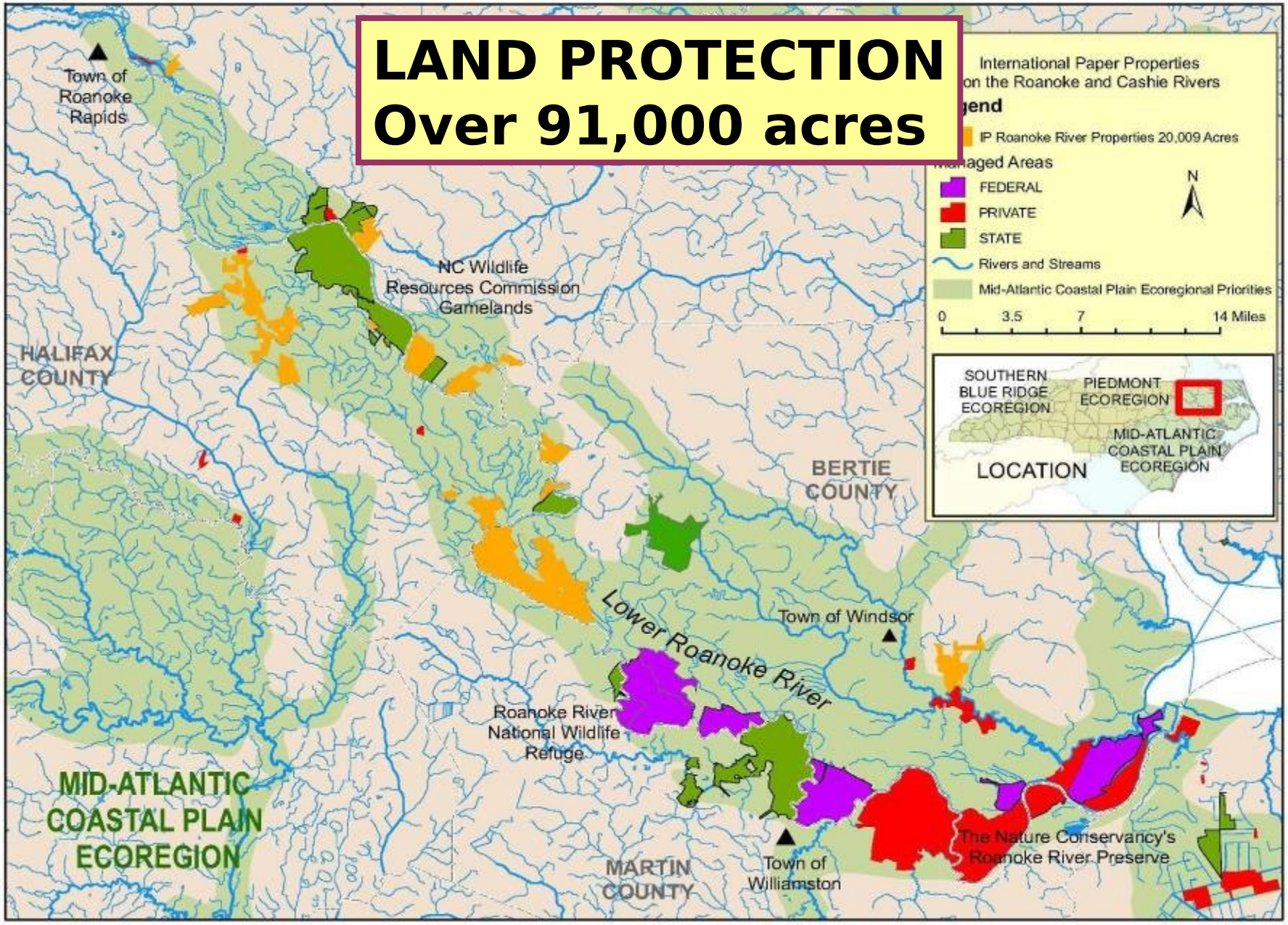
63 vulnerable species & co
- 3 federally listed animal
- 16 state listed animals
- 13 state listed plants
- 31 natural communities

AND
- 88 nesting birds of which
- 44 are neotropical migrants
- Several heronries
- The most diverse and most significant populations of migratory fish on the Atlantic Coast of the US.

51 pounds, 45 inches
2006



We envision that the Lower Roanoke River will be managed so that conservation of natural resources and native ecosystems, recreation, flood control, economic development, and hydropower production are balanced in ecologically and


LAND PROTECTION
Over 91,000 acres
Town of Roanoke Rapids
NC Wildlife Resources Commission Gamelands
HALIFAX COUNTY
BERTIE COUNTY
Lower Roanoke River
Town of Windsor
Roanoke River National Wildlife Refuge
MID-ATLANTIC COASTAL PLAIN ECOREGION
MARTIN COUNTY
Town of Williamston
The Nature Conservancy's Roanoke River Preserve
International Paper Properties on the Roanoke and Cashie Rivers
IP Roanoke River Properties 20,009 Acres
Managed Areas
FEDERAL
PRIVATE
STATE
Rivers and Streams
Mid-Atlantic Coastal Plain Ecoregional Priorities
N
0 3.5 7 14 Miles
SOUTHERN BLUE RIDGE ECOREGION
PIEDMONT ECOREGION
MID-ATLANTIC COASTAL PLAIN ECOREGION
LOCATION

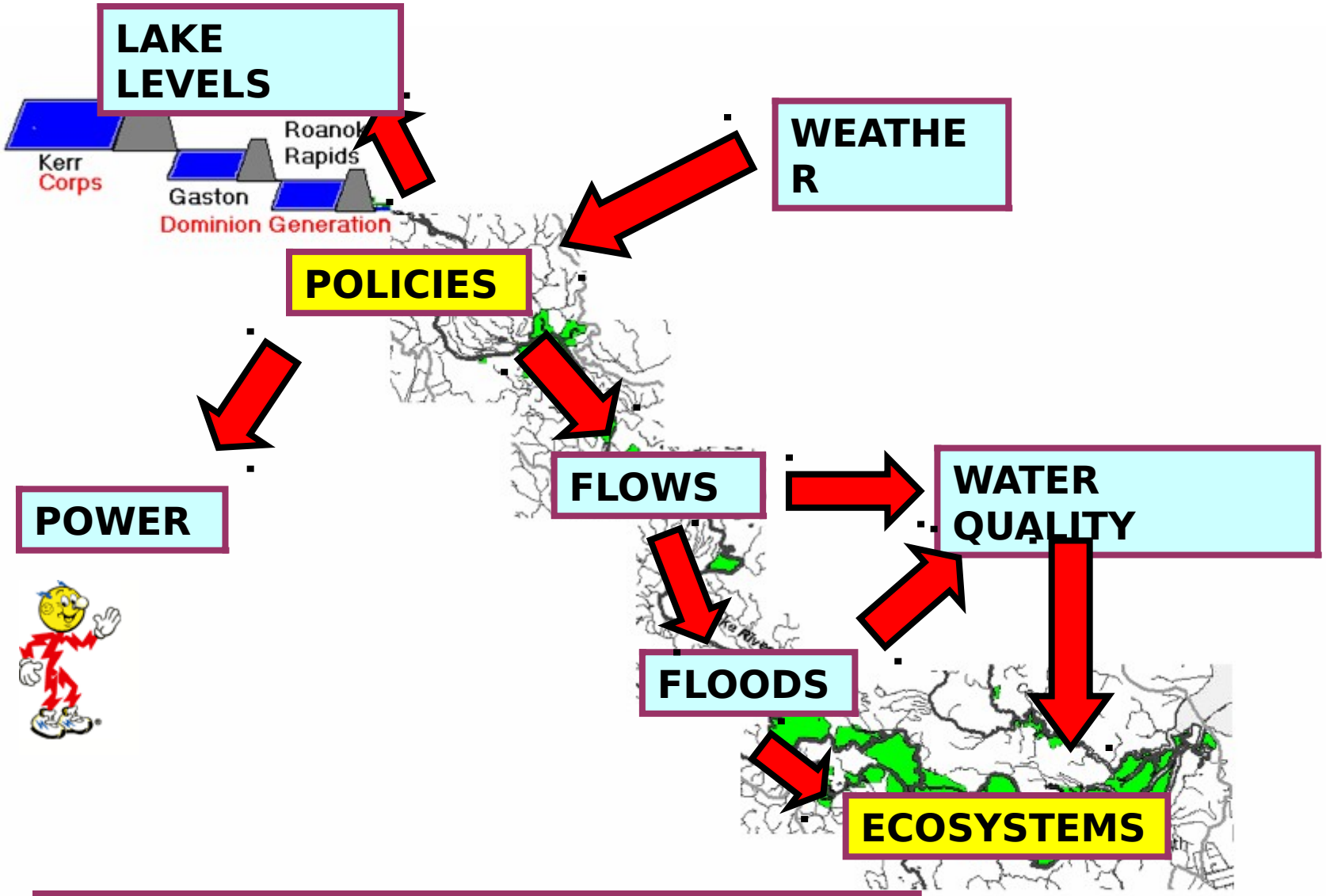
RESTORING & PROTECTING
ECOLOGICAL INTEGRITY

RESTORING & PROTECTING ECOLOGICAL INTEGRITY

The following issues are already resolved or strategies are in place for resolving them:

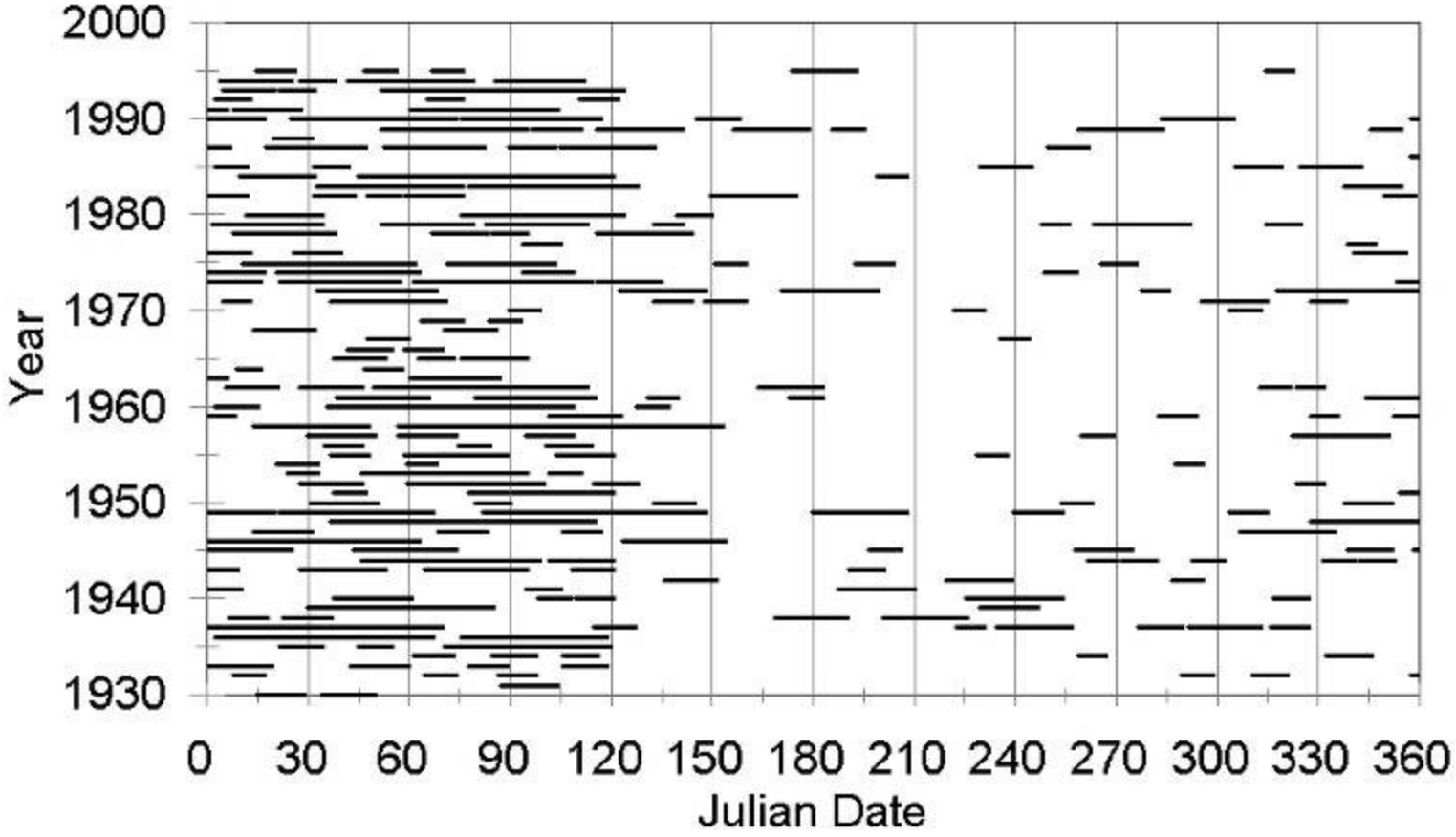
- **Spawning flows**
- **Water flows in the by-passed reach**
- **Minimum releases**
- **Fish passage**
- **Peaking**

However, it is clear that we still have a significant problem or two…


LAKE LEVELS
Roanoke Rapids
Kerr
Corps
Gaston
Dominion Generation
WEATHER
POLICIES
POWER
FLOWS
WATER QUALITY
FLOODS
ECOSYSTEMS
ROANOKE RIVER SYSTEM

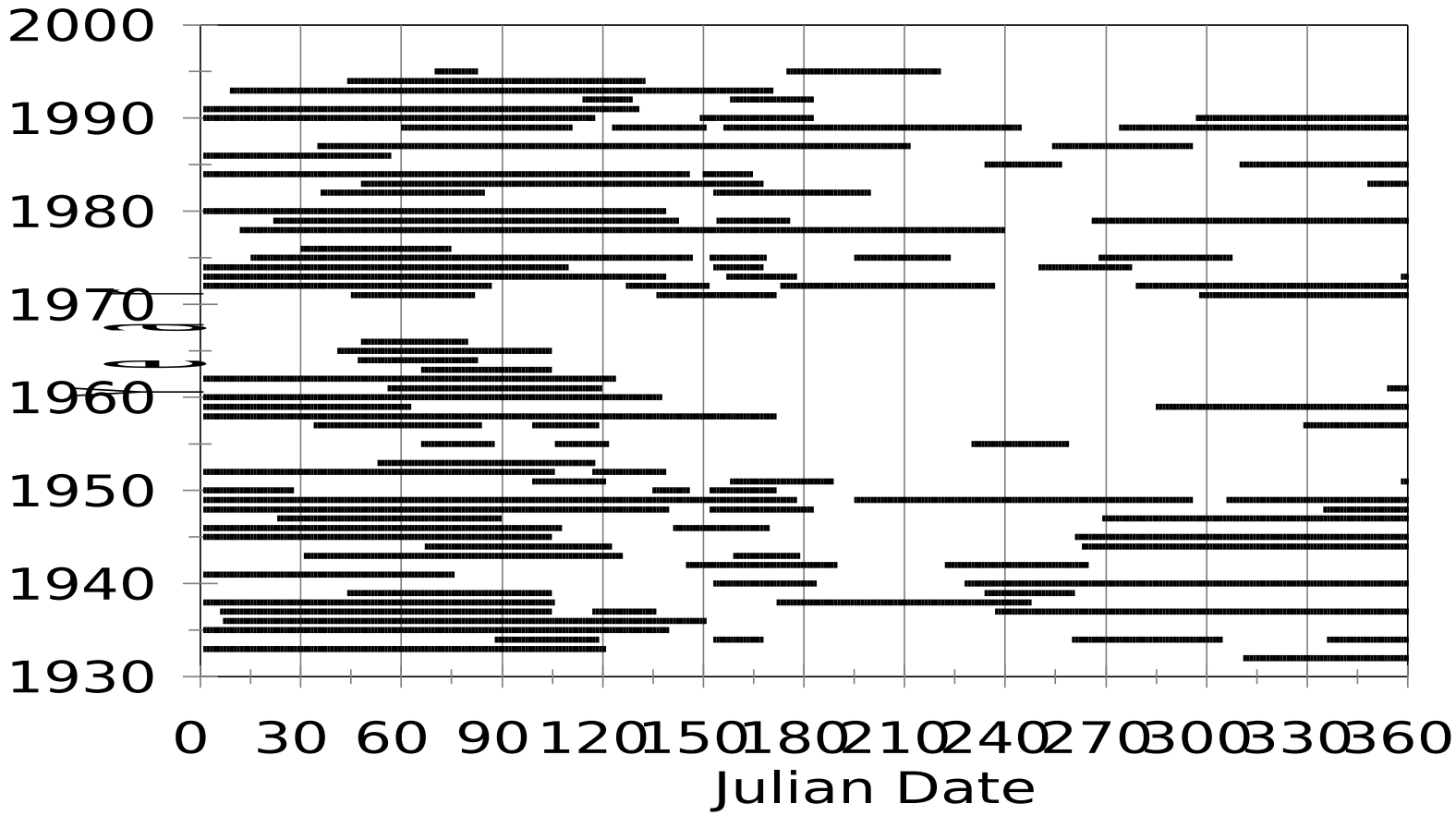
Flood Events - Unregulated

5 days > 11,500; 5 day avg < 8,500 cfs



Flood Events - Current O

5 days > 11,500; 5 day avg < 8,



Ecosystem Soup – 8/2003

Over 75,000 acres of bottomland hardwoods (about 50,000 acres in conservation ownership) are at risk from artificially extended growing season floods on the Roanoke River.

In addition to severe impacts on seedling recruitment and survival, TNC sponsored research using MODIS satellite data indicates widespread reduction in growth increment and local mortality.

Bottomland hardwoods are the most valuable of the floodplain ecosystems:

- **Game**
- **Timber Values**
- **Conservation Values**

Bottomland hardwoods are the floodplain ecosystems most vulnerable to extended growing season floods:

- **Seed germination and seedling survival**
- **Ground-nesting birds, herps**
- **Roosting bats and bears**

Bottomland hardwoods are being hammered by extended growing season floods.

The effect is cumulative.

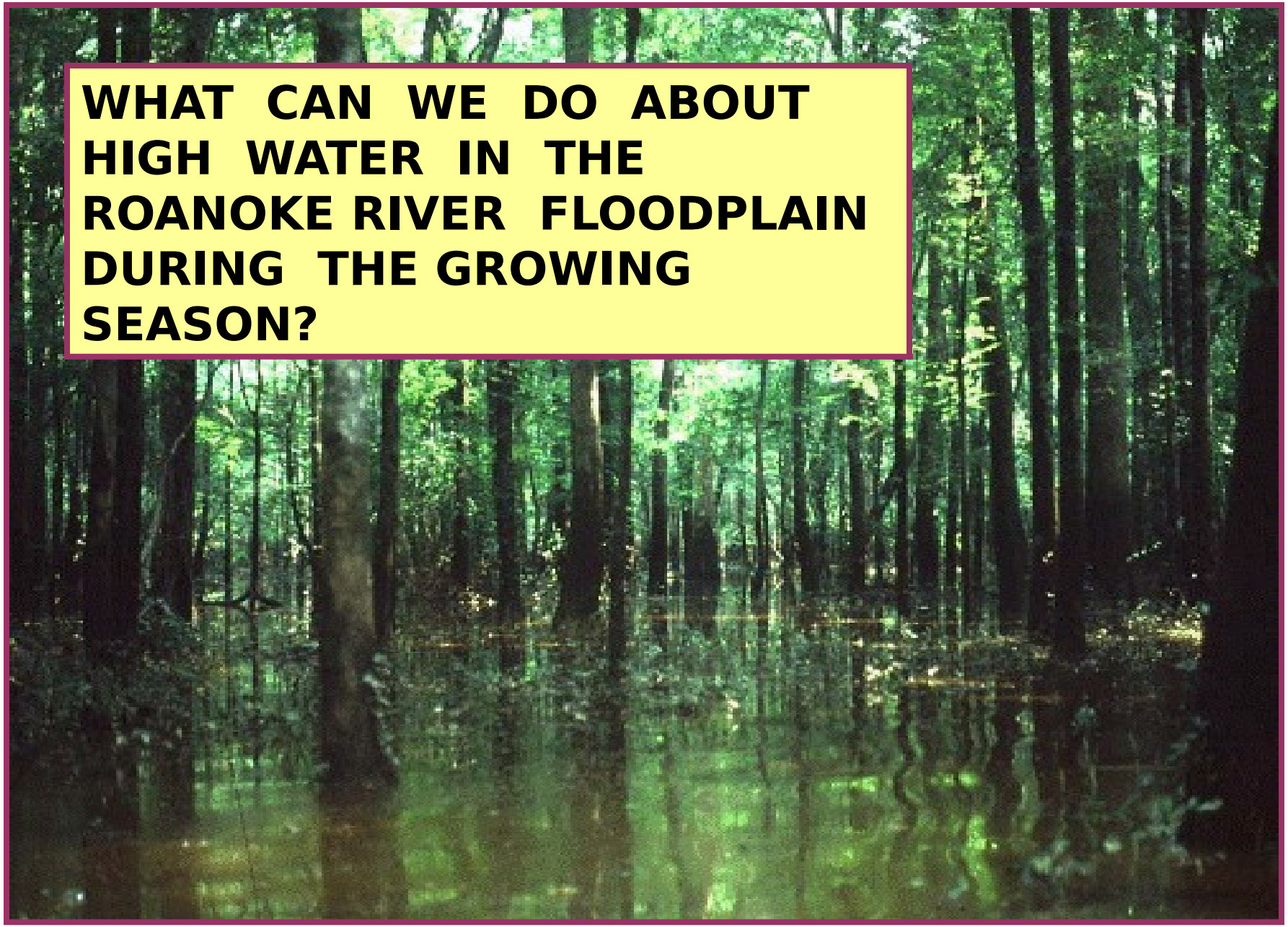
SOURCE OF THE PROBLEM

We had documented:

Various stresses on conservation targets

The immediate cause of these stresses – extended growing season floods

The source of the growing season floods – operating policies at Kerr Dam


WHAT CAN WE DO ABOUT HIGH WATER IN THE ROANOKE RIVER FLOODPLAIN DURING THE GROWING SEASON?

The Nature Conservancy

Protecting nature. Preserving life.™

BRIEF HISTORY:

1. 1990, TNC opened negotiations with USACE

2. 1996, USACE completed "Initial Appraisal Report." TNC, NC DENR, and Dominion launched effort to get 216 Study funded by Congress.

Dominion Generation negotiations launched for renewal of its FERC license.

BRIEF HISTORY:

3. 2000, USACE launched 216.

4. 2001, USACE completed “Reconnaissance Report”
indicating high probability that Kerr WCP should be
modified to reduce environmental impacts.

BRIEF HISTORY:

5. 2001, TNC first formally proposed a modified operating policy for Kerr Dam.

6. 2002, Driest year on the Roanoke.

7. 2002, TNC and USACE launched the "Sustainable Rivers Program." The Roanoke was one of the first nine rivers in the program.

8. 2003, Wettest year on the Roanoke.

BRIEF HISTORY:

9. March 2005, Dominion was issued a new FERC license that included adaptive approaches to reducing Dominion's contribution to growing season floods.

BRIEF HISTORY:

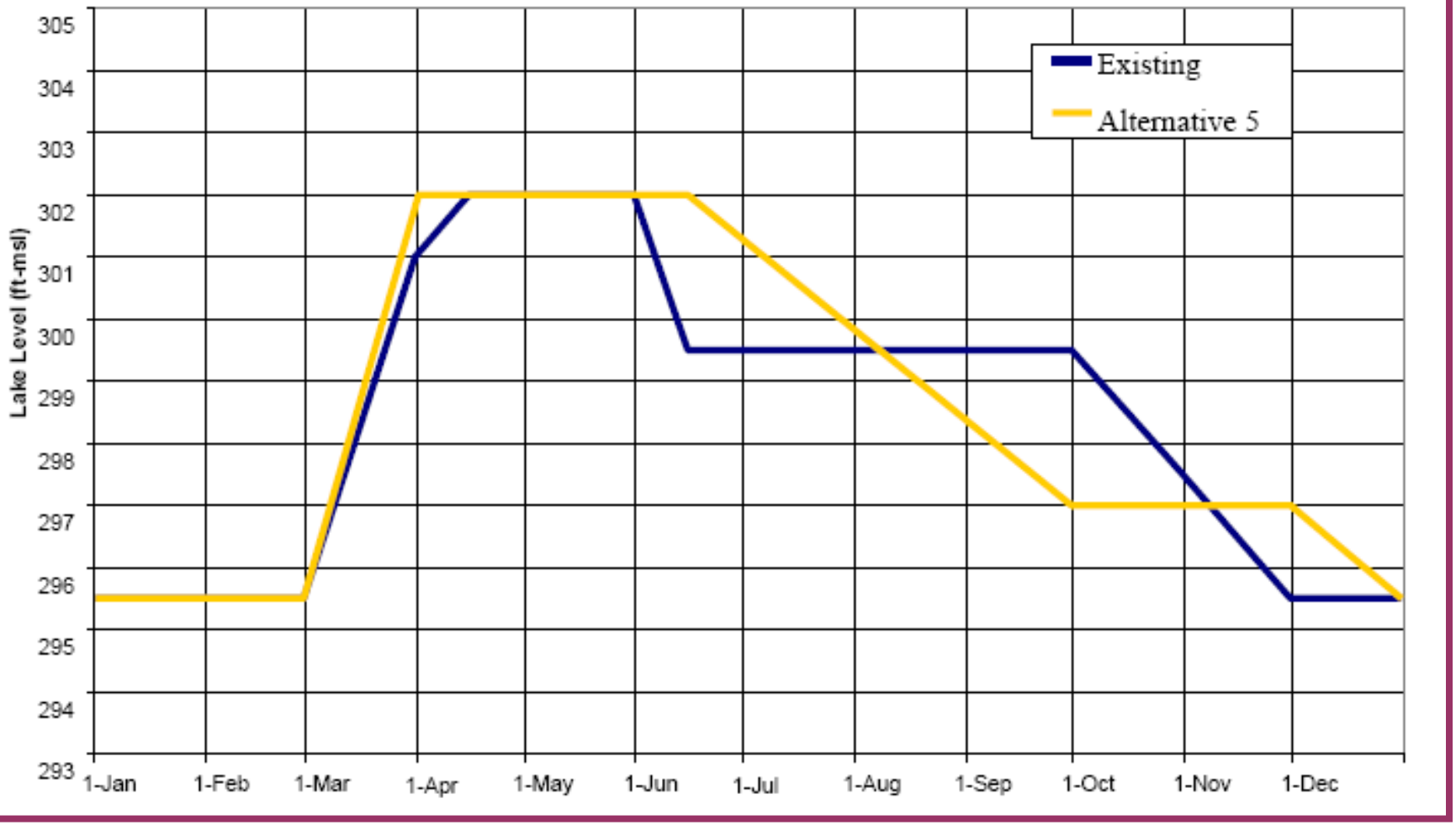
9. March 2005, Dominion was issued a new FERC license that included adaptive approaches to reducing Dominion's contribution to growing season floods.

Spawning flows
Water flows in the by-passed reach
Minimum releases
Fish passage
Peaking

BRIEF HISTORY:

10. July 2005, Colonel Pulliam assumed command in Wilmington.

11. 2006 and 2007 TNC made a series of presentations to and conducted a field trip for USACE HQ, South Atlantic Division, and Wilmington District urging adoption of interim operating policies for Kerr Dam to reduce the duration of growing season inundation PENDING completion of the 216.



Comparison of Old and New Guide Curves.

Existing Operations		Proposed Operations	
Kerr Reservoir Level (ft-msl)	Roanoke Rapids Releases (cfs)	Kerr Reservoir Level (ft-msl)	Roanoke Rapids Releases (cfs)
below 300	up to 8000	below 302	up to 11,000*
300–312	20,000	302–303	up to 20,000*
312–315	25,000	303–315	up to 33,000*
315–320	35,000	above 315	Existing Operations
320–321	85% of inflow	*During growing season (Mar-Oct); during non-growing season, follow Existing Operations.	
321	Inflow		

Comparison of Old and New Elevation – Release Rules

- **Increase net power production for SEPA, especially in the summer**

- **Slightly decrease net power production for Dominion Generation in the summer**

- **Reduce growing season inundation of bottomland hardwoods more effectively than the TNC proposal !!**

NUMBER OF GROWING SEASONS IN THE 78-YEAR POR WITH ONE OR MORE FLOWS AT OR ABOVE 15,000 CFS

	Status Quo	New Alternative	% Improved (REDUCED)
5-day flows	65	55	15.4%
10-day flows	47	33	29.8%
15-day	38	21	44.7%

MAXIMUM CONSECUTIVE GROWING SEASON DAYS INUNDATED IN VERY WET YEARS

	Status Quo	New Alternative	% Improved (REDUCED)
1987	98	42	57.1%
1998	91	35	61.5%
2003	154	36	76.6%

- **Increase the volume of water available for spawning releases while allowing for a more gradual draw down of Kerr Lake after spawning season**

- **Have no effect on the requirement for the WQ betterment plan while reducing the number of times it is triggered**

- **Without increasing Kerr Lake's summertime maximum elevation, but extending it slightly**

- **Without having any impact on Lake Gaston levels**

BENEFITS

BENEFITS

UNSPECIFIED BENEFITS

Drastic reduction in the differences between natural flows and managed flows (the organizing principle of the TNC – USACE Sustainable Rivers Program). This would produce additional, significant benefits for the in-stream and riparian ecosystems.